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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/781,708 | 02/20/2004 | Dirk Macs | MAES3001 / JEK | 4199 |
| 23364 7590 05/18/2007 BACON & THOMAS, PLLC 625 SLATERS LANE FOURTH FLOOR ALEXANDRIA, VA 22314 | | | EXAMINER GILES, NICHOLAS G | |
| | | | ART UNIT 2622 | PAPER NUMBER |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|-----------------------------------|--|
| Office Action Summary | Application No. 10/781,708 | Applicant(s) MAES, DIRK | |
| | Examiner Nicholas G. Giles | Art Unit 2622 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: Throughout the specification and claims the word "pixelization" is misspelled "pixelisation". This also occurs in the title. Appropriate correction is required.

Claim Objections

2. Claims **1 and 11** are objected to because of the following informalities: the word "pixelization" is misspelled "pixelisation". Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims **1 and 11** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
5. Regarding claims **1 and 11**, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims **1-11, 17, and 19** rejected under 35 U.S.C. 102(e) as being anticipated by Nayar et al. (U.S. Pub. No. 2005-0041113).

Regarding claim 1, Nayar et al. discloses:

A method for increasing the perceived resolution and decreasing the pixelisation of an image in applications involving a digital imaging apparatus comprising a lens and an imaging device, such as a display or a sensor, with a relatively low native resolution and comprising an array of pixels, the imaging device being used to sample the image, whereby the method consists of increasing the sampling rate, thereby sampling the image a multiple times, and, for each subsequent sampling, offsetting the apparent relative position between the imaging device and the lens (¶0129-0133 and Figs. 13 and 18).

Regarding claim 2, see the rejection of claim 1 and note that Nayar et al. further discloses:

Sampling rate is at least doubled (§0129-0133 and Figs. 13 and 18, multiple images for each fused high resolution image).

Regarding claim 3, see the rejection of claim 1 and note that Nayar et al. further discloses:

Apparent relative position between the imaging device and the lens is offset in a horizontal and or a vertical direction (§0133).

Regarding claim 4, see the rejection of claim 1 and note that Nayar et al. further discloses:

Apparent relative position between the imaging device and the lens is offset in a diagonal direction (§0133).

Regarding claim 5, see the rejection of claim 1 and note that Nayar et al. further discloses:

Apparent relative position between the imaging device and the lens is offset at least over a distance equal to a fraction of the size of a pixel (§0133).

Regarding claim 6, see the rejection of claim 5 and note that Nayar et al. further discloses:

Apparent relative position between the imaging device and the lens is offset over a distance equal to the size of a number of pixels plus a fraction of the size of a pixel (§0133, diagonal would offset a distance of between 1 and 2 pixels to get to the diagonal pixel while sweeping)

Regarding claim **7**, see the rejection of claim 1 and note that Nayar et al. further discloses:

Apparent relative position between the imaging device and the lens is offset by either offsetting the imaging device or by offsetting the lens, or by offsetting both the imaging device and the lens (§0129-0133 and Figs. 13 and 18, refractive plate 302 can be a lens).

Regarding claim **8**, see the rejection of claim 1 and note that Nayar et al. further discloses:

Apparent relative position between the imaging device and the lens is offset by tilting a transparent plate situated in the optical trajectory of the image (§0129-0133 and Figs. 13 and 18).

Regarding claim **9**, see the rejection of claim 1 and note that Nayar et al. further discloses:

Transparent plate is situated between the imaging device and the lens (§0129-0133 and Figs. 13 and 18).

Regarding claim **10**, see the rejection of claim 1 and note that Nayar et al. further discloses:

Transparent plate is tilted stepwisely between two or more angular positions in a synchronized manner with the increased sampling frequency (§0129-0133 and Figs. 13 and 18).

Regarding claim **11**, see the rejection of claim 1 and note that Nayar et al. further discloses:

An imaging apparatus allowing to increase the perceived resolution and to decrease the pixelisation of an image according to the method of claim 1, comprising a housing, at least a lens and a digital imaging device, such as a display or a sensor, with a relatively low resolution and comprising an array of pixels for sampling images with a given sampling rate, wherein the imaging apparatus further comprises means for offsetting the apparent relative position between the imaging device and the lens (§0129-0133 and Figs. 13 and 18).

Regarding claim 17, see the rejection of claim 11 and note that Nayar et al. further discloses:

Device is a digital camera (§0129-0133 and Figs. 13 and 18).

Regarding claim 19, see the rejection of claim 11 and note that Nayar et al. further discloses:

Device is a digital printing device (§0129-0133 and Figs. 13 and 18, the images must be digitally printed to a memory in order to be remembered for fusing them into a high resolution image).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims **12-16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Nayar et al. in view of Sztanko et al. (U.S. Patent No. 5,363,136).

Regarding claim **12**, see the rejection of claim 1 and note that Nayar et al. is silent with regards to mounting the plate rotatably on a shaft. Sztanko et al. discloses:

Means for offsetting the apparent relative position between the imaging device and the lens are formed by a transparent plate positioned between the lens and the imaging device, said transparent plate being rotatably fixed on a shaft, and driving means to rotate the plate in an alternating manner between predetermined angular positions (5:39-54, 6:61-7:29, and Fig. 3).

Sztanko et al. discloses in 5:66-6:3 that an advantage to using the plate mounted on a rotatable shaft is that a stepped motor can provide sufficient positioning control to the shaft. For this reason it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Nayar's positioning system include the plate being mounted on a rotatable shaft and driving means to rotate the plate in an alternating manner between predetermined angular positions.

Regarding claim **13**, see the rejection of claim 12 and note that Sztanko et al. further discloses:

Driving means to rotate the transparent plate comprise at least one rotating camshaft driven by a motor and a cam follower which is in contact with said camshaft and which is connected to the transparent plate (support plate 52, 5:39-54, 6:61-7:29, and Fig. 3).

Sztanko et al. discloses in 5:66-6:3 that an advantage to using a rotating camshaft driven by a motor and a cam follower which is in contact with said camshaft and which is connected to the transparent plate is that a stepped motor can provide sufficient positioning control to the shaft. For this reason it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Nayar's positioning system include using a rotating camshaft driven by a motor and a cam follower which is in contact with said camshaft and which is connected to the transparent plate.

Regarding claim **14**, see the rejection of claim 13 and note that Sztanko et al. further discloses:

Transparent plate is connected to a spring which is attached to the housing of the imaging apparatus (5:39-54, 6:61-7:29, and Fig. 3).

Sztanko et al. discloses in 5:66-6:3 that an advantage to using the transparent plate connected to a spring which is attached to the housing of the imaging apparatus is that a stepped motor can provide sufficient positioning control to the shaft. For this reason it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Nayar's positioning system include using the transparent plate connected to a spring which is attached to the housing of the imaging apparatus.

Regarding claim **15**, see the rejection of claim 13 and note that Sztanko et al. further discloses:

Rotating speed of the motor is such that tilting the transparent plate between angular position is synchronized with the sampling rate (5:39-54, 6:61-7:29, and Fig. 3).

Sztanko et al. discloses in 5:30-34 that using this setup allows the scanning of several adjacent areas of an image thus allowing an increased resolution image to be formed. For this reason it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Nayar's positioning system include rotating the motor such that the tilting of the plate is synchronized with the sampling rate.

Regarding claim 16, see the rejection of claim 12 and note that Sztanko et al. further discloses:

Transparent plate is alternately tilted back and forth between two predetermined angular positions parallel to the imaging device or slightly tilted in respect to the imaging device (5:39-54, 6:61-7:29, and Fig. 3).

Sztanko et al. discloses in 5:30-34 that using this setup allows the scanning of several adjacent areas of an image thus allowing an increased resolution image to be formed. For this reason it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Nayar's positioning system include alternately tilting the plate back and forth with respect to the imaging device.

10. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nayar et al.

Regarding claim **18**, see the rejection of claim 1 and note that Nayer et al. is silent with regards to the device being a projecting device. Official Notice is taken that it was well known at the time the invention was made to digitally project the images captured. An advantage to doing so is that one can view the image to see if it is satisfactory to the user. For this reason reason it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Nayar's device be a digital projecting device.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nicholas G. Giles whose telephone number is (571) 272-2824. The examiner can normally be reached on Monday through Friday from 7:30am to 4:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc - Yen Vu can be reached on (571) 272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2622

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NGG

A handwritten signature in black ink, appearing to read 'Ngoc-Yen Vu', with a long horizontal flourish extending to the right.

NGOC-YEN VU
SUPERVISORY PATENT EXAMINER